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The energy transition in Europe
needs to enter a phase of
unprecedented acceleration

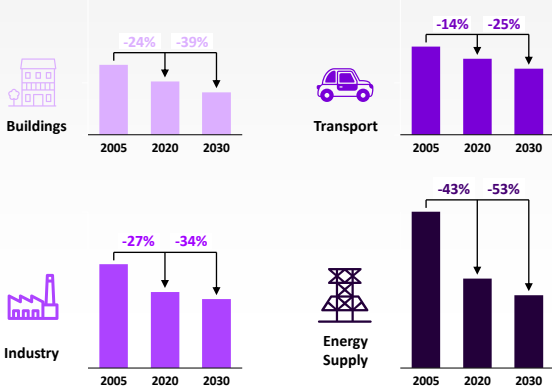


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Twin Crises – the time to act was yesterday

Climate Crisis Aggressive decarbonization required to limit warming

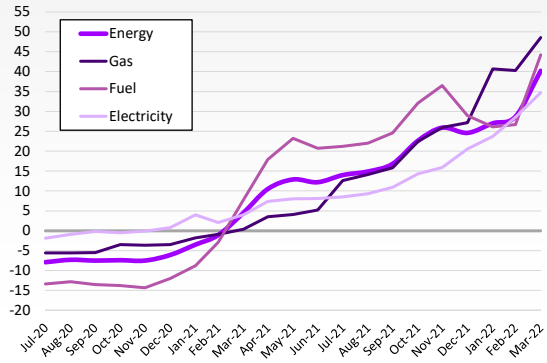
EUROPEAN UNION GHG EMISSIONS BY SECTOR¹
MtCO₂-eq



Source: ¹ EEA Trends and Projections in Europe 2021, 2020 approx. inventory and 2030 projections; ² Eurostat Data Browser; Harmonized Index of Consumer Prices, sub-components of energy include gas, fuel, and electricity

Energy Crisis Raising urgent energy security and affordability concerns

EVOLUTION OF ENERGY PRICES IN THE EUROPEAN UNION²
Annual rate of change



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REPowerEU makes clear that renewables and electrification are the solution

- Increasing RE deployment and permitting reform**
45% 2030 target for renewables share
- Accelerating rollout of solar capacity**
x2 solar PV capacity by 2025
58 TWh additional rooftop generation by 2025
- Doubling deployment rate of heat pumps**
10 million units over the next five years

- Decarbonizing industry via electrification & hydrogen**
Innovation Fund to be brought forward to support the switch
- Accelerating hydrogen production and imports**
x2 domestic production by 2030 vs. Fit for 55
x4 total (incl. imports) by 2030 vs. Fit for 55*
- Scaling up renewable generation for hydrogen**
120 GW electrolyzer capacity needed by 2030

Source: ¹ REPowerEU Plan Staff (May 2022); * Includes scaling required to meet overall domestic hydrogen production (10 Mt) and imports (10 Mt) targets

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Game Changers

Five key game changers needed to accelerate action and address the twin crises

- 1 Raise the game on clean and renewable power and grids
- 2 Electrify everything that can be electrified
- 3 Strengthen grids, the backbone of the transition
- 4 Unlock the power of the demand side
- 5 Secure signals, secure investment

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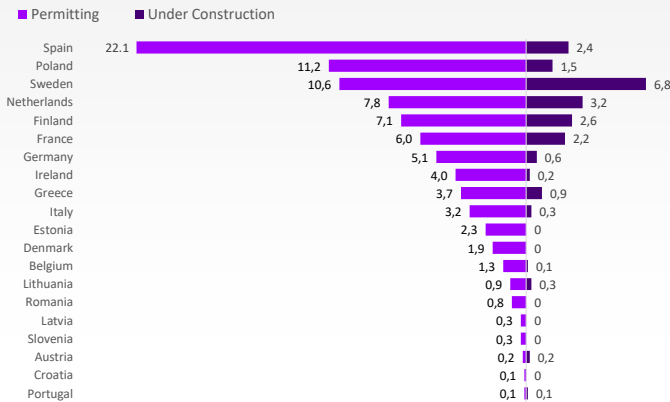
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Game Changer 1

Raise the game on clean and renewable power and grids

The process for permitting, developing and building new renewable generation capacity and grid connection infrastructure must become much shorter to enable the addition of over 800 GW of renewable capacity by 2030

Top 20 EU countries by wind pipeline capacity⁴
Broken down by deployment stage (GW)



The EU has 4x more wind capacity in permitting than under construction, and supply chain bottlenecks and rising material prices are causing renewable power projects to be delayed or cancelled.

> Source: ⁴ Energy Monitor - Global Data, only wind projects with more than 5MW of capacity represented

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Game Changer 2

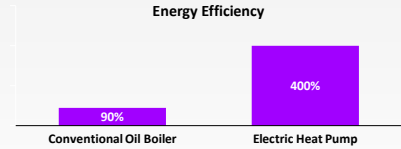
Electrify everything that can be electrified

Electrification will tackle emissions and enhance energy security and efficiency. It will also critically contribute to a healthier society - air pollution continues to drive a significant public health burden in the EU linked to 350,000 premature deaths per annum⁵

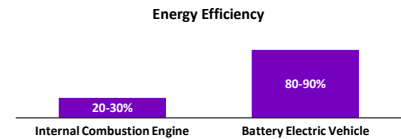
01 Electrification is crucial to reaching net zero by 2050 and creating a more livable world



02 Electric heating solutions save energy, reduce dependence on imported fossil fuels, and lower consumer bills⁶



03 Battery electric vehicles are more efficient, travel 3-4x the distance with the same amount of energy, and improve air quality⁷



Source: ⁵ EEA, Health Impacts of Air Pollution in Europe, 2021; ⁶ Eurelectric, Power Barometer 2020; ⁷ Electrification Alliance Declaration

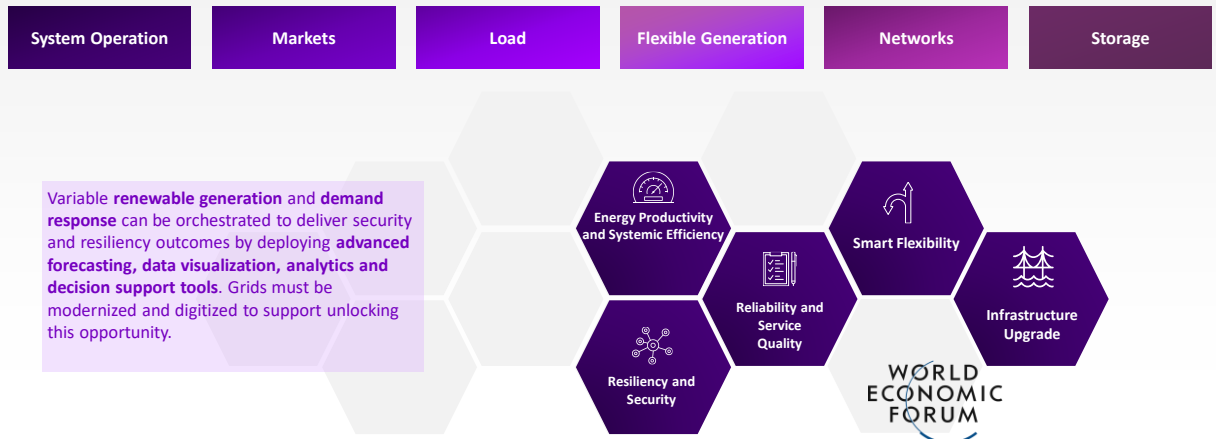
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Game Changer 3

Strengthen grids, the backbone of the transition

Timely and efficient integration of renewables requires a reversal of the decline in crucial infrastructure investment. Activating key integration levers⁸ to create system flexibility will reduce overall need for capital build and unleash system value outcomes.

Utilizing key variable renewable integration levers can deliver on critical system value outcomes⁹



Variable renewable generation and demand response can be orchestrated to deliver security and resiliency outcomes by deploying advanced forecasting, data visualization, analytics and decision support tools. Grids must be modernized and digitized to support unlocking this opportunity.

Source: ⁸ National Renewable Energy Laboratory; ⁹ World Economic Forum, System Value Framework

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Game Changer 4

Unlock the power of the demand side

Deploying smart meters, smart grids and other technologies coupled with the right price signals and incentives can unlock demand side opportunities to maximize the potential for efficiency, flexibility, circularity and shared infrastructure synergy



Maximize the efficiency opportunity



Harness the potential for flexibility



Repurpose waste and unlock shared infrastructure synergies

Adoption of electric solutions

Share of consumers surveyed¹⁰

Electric Heating	Home Energy Generation	Electric Mobility
18%	9%	7%

Barriers to adoption



Cost



Awareness



Complexity Concerns

Source: ¹⁰ Eurelectric & Accenture, Pledge to the People

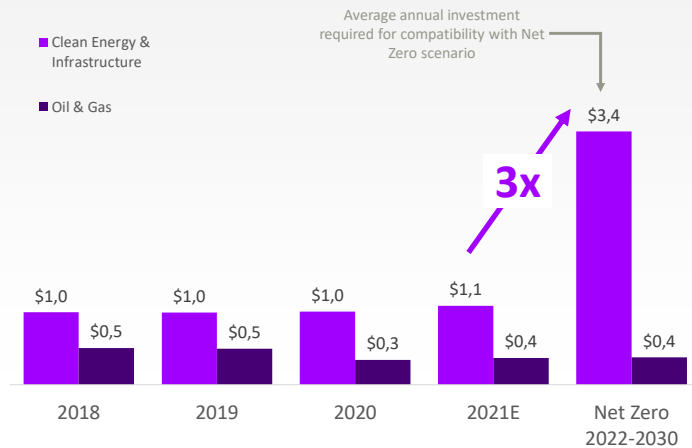
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Game Changer 5

Secure signals, secure investment

Transition related spending is not ramping up fast enough for a Net-Zero pathway

ANNUAL GLOBAL INVESTMENT¹¹
USD in trillions



Scaling up renewable generation, storage, power-to-X and demand-side flexibility on time to meet electrification coupled with green hydrogen production targets will require enhanced investor certainty to support final investment decision and unlock the project pipeline.

Source: ¹¹ IEA, World Energy Investment 2021

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Key Enabler

Address the skills gap

The workforce of the future will need to be data- and digital-fluent to fill the millions of European jobs that will be created by the clean energy transition and electrification

Job creation potential in growing industries¹²

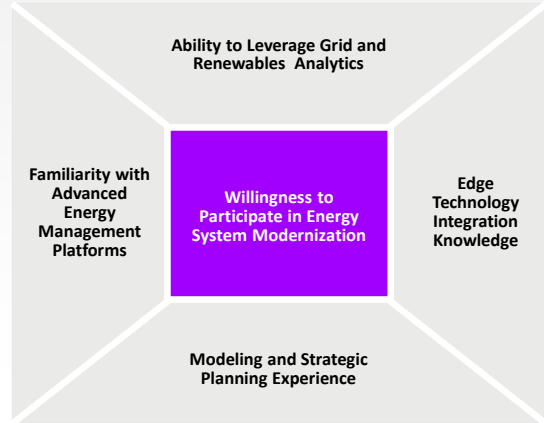
7.4M | Grids, networks, variable renewable energy and future power markets

489K | Efficiency and demand optimization

340K | Green hydrogen

199K | Electrification of transport

Skills needed in the next 10 years¹³

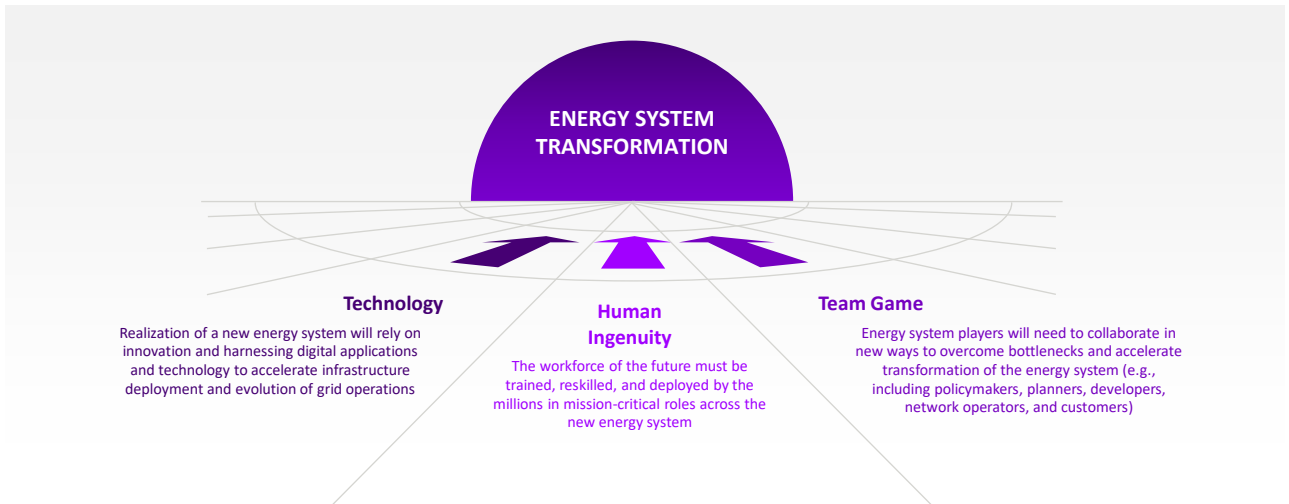


Source: ¹² EC Energy Efficiency Funding, Hydrogen Europe Report, AIE Report; ¹³ Forbes, April 2022

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Technology, human ingenuity and a team game will transform the energy system



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